TEMPORAL TRENDS OF DENGUE FEVER/DENGUE HEMORRHAGIC FEVER IN BANGKOK, THAILAND FROM 1981 TO 2000: AGE-PERIOD-COHORT ANALYSIS

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The aim of this study was to examine the effects of age, time period and birth cohorts with dengue fever/dengue hemorrhagic fever (DF/DHF) in Bangkok, Thailand over the period 1981-2000. The method of model building was modified from Clayton and Schifflers (Clayton and Schifflers, 1987a,b). The age group at greatest risk for DF/DHF was 5-9 years old. The period effect shows a remittent pattern, with significant increases in 1986-1990 and 1990-2000. The birth cohort group showed a significant decreasing trend from the 1961-1965 group to the 1991-1995 group (R^2=0.7620) with a decreasing rate of 0.1. We conclude that the temporal trend of DF/DHF is decreasing; especially for DHF.

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TRAVELLING WAVES IN THE OCCURRENCE OF DENGUE HAEMORRHAGIC FEVER IN THAILAND

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Dengue fever is a mosquito-borne virus that infects 50-100 million people each year. Of these infections, 200,000-500,000 occur as the severe, life-threatening form of the disease, dengue haemorrhagic fever (DHF). Large, unanticipated epidemics of DHF often overwhelm health systems. An understanding of the spatial-temporal pattern of DHF incidence would aid the allocation of resources to combat these epidemics. Here we examine the spatial-temporal dynamics of DHF incidence in a data set describing 850,000 infections occurring in 72 provinces of Thailand during the period 1983 to 1997. We use the method of empirical mode decomposition to show the existence of a spatial-temporal travelling wave in the incidence of DHF. We observe this wave in a three-year periodic component of variance, which is thought to reflect host-pathogen population dynamics. The wave emanates from Bangkok, the largest city in Thailand, moving radially at a speed of 148 km per month. This finding provides an important starting point for detecting and characterizing the key processes that contribute to the spatial-temporal dynamics of DHF in Thailand.

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